

AMENDMENTS TO THE CLAIMS

Claims 1-13 (Canceled)

Claim 14 (New) A substrate polishing apparatus comprising:

- a polishing table having a polishing surface;
- a top ring for holding a substrate, wherein a semiconductor substrate held by said top ring is pressed against said polishing surface and a surface to be polished of the semiconductor substrate is polished by relative movement between the semiconductor substrate and said polishing surface;
- a pressing force changing mechanism for changing a pressing force pressing the semiconductor substrate against said polishing surface;
- a relative movement speed changing mechanism for changing speed of relative movement between said top ring and said polishing table;
- a film thickness detector including an eddy current monitor for detecting a film thickness of the semiconductor substrate with the eddy current monitor; and
- a control mechanism operable to control plural polishing processes on said polishing surface of said polishing table while changing the pressing force and the relative movement speed through said pressing force changing mechanism and said relative movement speed changing mechanism and operable to control change from a preceding polishing process to a next polishing process on the basis of a film thickness detection signal from said film thickness detector.

Claim 15 (New) The substrate polishing apparatus of claim 14, and further comprising one of a dresser for dressing said polishing surface of said polishing table and a cleaner for cleaning said polishing surface of said polishing table, wherein said control mechanism is operable to control said dresser or said cleaner between the polishing processes to effect dressing or cleaning of said polishing surface of said polishing table.

Claim 16 (New) A method of polishing a substrate having a first metal layer and a second metal layer formed under the first metal layer, comprising:

polishing the first metal layer by pressing and moving the first metal layer against a polishing surface with a first polishing fluid;

measuring a film thickness of the first metal layer with an eddy current monitor during said polishing the first metal layer; and

changing the first polishing fluid to a second polishing fluid when the eddy current monitor detects a state in which the first metal layer has been removed.

Claim 17 (New) The method of claim 16, the second polishing fluid comprises water.

Claim 18 (New) The method of claim 16, wherein the substrate is pressed against the polishing surface by a load which can be changed.

Claim 19 (New) The method of claim 16, wherein the substrate is slid relative to the polishing surface with a speed which can be changed.

Claim 20 (New) The method of claim 17, and further comprising polishing the second metal layer by pressing and moving the second metal layer against the polishing surface with a third polishing liquid which is an alkaline liquid.

Claim 21 (New) The method of claim 17, and further comprising polishing the second metal layer by pressing and moving the second metal layer against the polishing surface with a third polishing liquid which is an acidic liquid.

Claim 22 (New) The method of claim 20, and further comprising cleaning the substrate after said polishing the second metal layer, drying the substrate after said cleaning, detecting a film thickness of the substrate after said drying and storing the film thickness of the substrate.

Claim 23 (New) A method of polishing a substrate having a first metal layer and a second metal layer formed under the first metal layer, comprising:

polishing the first metal layer by pressing and moving the first metal layer against a polishing surface with a first polishing fluid;

measuring a film thickness of the first metal layer with an eddy current monitor during said polishing the first metal layer;

changing the first polishing fluid to a second polishing fluid when the eddy current monitor detects a state in which the first metal layer has been removed;

polishing the second metal layer by pressing and moving the second metal layer against the polishing surface with the second polishing fluid; and

detecting a film thickness of the second metal layer with an eddy current monitor during said polishing the second metal layer.

Claim 24 (New) The method of claim 23, wherein the second polishing fluid comprises a water.

Claim 25 (New) The method of claim 23, wherein the substrate is pressed against the polishing surface by a load which can be changed.

Claim 26 (New) The method of claim 23, wherein the substrate is slid relative to the polishing surface with a speed which can be changed.

Claim 27 (New) The method of claim 24, and further comprising polishing the second metal layer by pressing and moving the second metal layer against the polishing surface with a third polishing liquid which is an alkaline liquid.

Claim 28 (New) The method of claim 24, and further comprising polishing the second metal layer by pressing and moving the second metal layer against the polishing surface with a third polishing liquid which is an acidic liquid.

Claim 29 (New) The method of claim 27, and further comprising cleaning the substrate after said polishing the second metal layer, drying the substrate after said cleaning, detecting a film thickness of the substrate after said drying and storing the film thickness of the substrate.

Claim 30 (New) A method of polishing a substrate having a first metal layer and a second metal layer formed under the first metal layer, comprising:

polishing the first metal layer by pressing and moving the first metal layer against a polishing surface with a first polishing fluid;

detecting a film thickness of the first metal layer with an image processing device during said polishing the first metal layer;

changing the first polishing fluid to a second polishing fluid when the image processing device detects a state in which the first metal layer has been removed;

polishing the second metal layer by pressing and moving the second metal layer against the polishing surface with the second polishing fluid; and

detecting a film thickness of the second metal layer with the image processing device during said polishing the second metal layer.

Claim 31 (New) The method of claim 30, wherein the second polishing fluid comprises a water.

Claim 32 (New) The method of claim 30, wherein the substrate is pressed against the polishing surface by a load which can be changed.

Claim 33 (New) The method of claim 30, wherein the substrate is slid relative to the polishing surface with a speed which can be changed.

Claim 34 (New) The method of claim 31, and further comprising polishing the second metal layer by pressing and moving the second metal layer against the polishing surface with a third polishing liquid which is an alkaline liquid.

Claim 35 (New) The method of claim 31, and further comprising polishing the second metal layer by pressing and moving the second metal layer against the polishing surface with a third polishing liquid which is an acidic liquid.

Claim 36 (New) The method of claim 30, and further comprising cleaning the substrate after said polishing the second metal layer, drying the substrate after said cleaning, detecting a film thickness of the substrate after said drying and storing the film thickness of the substrate.

Claim 37 (New) A method of polishing a substrate having a first metal layer and a second metal layer formed under the first metal layer, comprising:

polishing the first metal layer by pressing and moving the first metal layer against a polishing surface with a first polishing fluid;

detecting a film thickness of the first metal layer with an eddy current monitor during said polishing the first metal layer and with an optical sensor to detect a state in which the first metal layer has been removed; and

changing the first polishing fluid to a second polishing fluid when the optical sensor detects the state in which the first metal layer has been removed.